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THE INFLUENCE OF GEOGRAPHIC FACTORS ON OCEAN SHIPPING*

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In 1914 there were only four American vessels regularly crossing the Atlantic, and altogether only 735,000 tons of steamers registered for foreign trade; today there are 10.5 million tons so documented. In fact we have so many ships we do not know what to do with them. The American merchant marine, grown large and awkward in these few years, presents a problem that needs the aid not only of economists and business men but also of geographers. It is admitted that many economic handicaps will have to be overcome or neutralized by legislative or other action and that political considerations will complicate and delay a decisive settlement of our shipping problem. But geographers can render valuable service in calling attention to one important factor which has been too frequently neglected—the influence of the distribution of natural resources on industrial and maritime development. On the basis of the work of commercial geographers with reference to this factor, and with new information lately made available, it is now possible to determine, with an approach to scientific accuracy, the services essential to our trade and to formulate from the viewpoint of national economy a statement of the influence of geographic factors on the ocean shipping of a country.

ONE-SIDED CHARACTER OF AMERICAN SHIPPING

Heretofore trade statistics have been collected mainly from the commercial viewpoint, in terms of value, and have been poorly adapted to the needs of shipping. Owing to the pioneer work of a member of the Association of American Geographers we are now getting excellent trade returns from the shipping viewpoint in terms of long tons. Under the authority of Section 21 of the Shipping Act of 1916 the master of each vessel, upon entering and clearing a port, is required by the Shipping Board to make a statement showing the total tons of cargo by principal articles on board his ship, the port of origin or destination, and other details. These reports are made by ships of 500 gross tons and over entering from, or clearing for, a foreign port. While the results compiled are not yet absolutely inclusive, the percentage of error is small; and the figures can be taken as characteristic of our commerce.

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* Read at the Washington Meeting of the Association of American Geographers, December, 1921.

The most striking point brought out by these statistics is the one-sided nature of our trade—a fact not surprising in view of the character and extent of our natural resources yet consistently overlooked by those who are volubly insisting on the desirability of a large American merchant marine. An equally important deduction follows: Shipping cannot well exist on one-way traffic. Without a bulky import trade, the United States is at a disadvantage in the ownership and operation of a large merchant fleet and certainly would find difficulty in operating one which some insist should be large enough to carry 50 per cent of the total volume of our trade.

In the year ended June 30, 1921, imports into the United States amounted to 36 million long tons, as compared with exports of 58 million; or, if bulk oil, which moves in specialized tankers, is excluded, the comparison is 18 million tons to 52 million.[1] In shipping terms this disproportion means roughly that two-thirds of the cargo ships which go out loaded must return empty. Expressed in terms of ocean freight rates, this is the equivalent of saying that outbound rates must be high enough to pay for the return of the ships in ballast. Complaints are constantly made because rates from this country are much higher than those to this country. When three ships are bidding for cargo enough for only one, and when vessel owners are faced with the necessity of buying ballast if no cargo for this country can be obtained, it is entirely logical to expect low rates on inbound traffic. Low inward rates are an aid to foreigners in landing their goods at our docks and make more difficult the placing of our goods abroad in competition with other countries.

Analysis of the Trade of Certain American Ports

As might be expected, this overbalanced relationship between exports and imports is accentuated in certain regions and reversed in others. An analysis of the trade of some of our important ports will serve to illustrate this condition. Boston's trade is in contrast with that of the other major ports, since its imports are three times the volume of its exports: 2,349,363 tons as against 712,000 tons. New England imports heavy materials such as oil, sugar, wool, hides, and the like; it exports light miscellaneous manufactured products. Boston's imports come from raw-material-producing countries; in 1921 from Mexico, 1,012,547 tons; from India, 269,490 tons; from Cuba, 237,706 tons; from China, 113,413 tons; or 70 per cent of its total imports. To these countries Boston exported only 39,879 tons. On the other hand, Boston's exports go largely to industrial countries: to the United Kingdom, 398,800 tons; to Holland and Belgium, 70,130 tons; and to Germany, 60,684 tons; or 73 per cent of its total exports. Imports from these countries into Boston in 1921 amounted to 219,221 tons and made a more nearly balanced trade of manufactured goods moving both ways.

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[1] *Commerce Repts.*, Sept. 26, 1921, p. 243; *ibid.*, Nov. 21, 1921, pp. 713–714. Figures for the ports are taken from these articles and from the more detailed material in the Bureau of Foreign and Domestic Commerce on which they are based.

Middle West wheat and steel products, necessary for what might be called ballast for the light products of the region, are not now moving through Boston. It is not unusual for a ship to discharge at Boston and then proceed to New York to take on a load of products originating around Boston. New England, with its scanty natural resources and its advanced industrial development, is having difficulty in supporting direct shipping.

The Hampton Roads ports are an example of the contrary situation. Norfolk and Newport News together exported 12,026,257 tons in the fiscal year 1921 and imported less than 300,000 tons. Exports from these ports were greatest to South America—2,676,816 tons; and strangely enough, next in order was the United Kingdom, which took 1,337,622 tons; France followed with 1,301,016 tons; then Germany, Holland, and Belgium with 906,350 tons together, Italy with 895,670 tons, and Cuba with 471,177—a total of 7,588,651 tons out of 12,026,257. These regions sent only 188,341 tons into Hampton Roads. The ships of all countries are called upon for this export movement, which is mainly coal, and the choice is uniformly on the basis of the lowest rate. The fact that this trade is unbalanced does not keep shipping from the Roads, since many countries must have our fuel; but, because of other economic handicaps, the large outbound movement of coal is not of the advantage to our shipping that the British exportation of coal is to British shipping, as will be shown later.

Few cases illustrate better the influence of the geographic distribution of natural resources on shipping. The distance from Cardiff to Buenos Aires is greater than that from Hampton Roads; yet a British vessel can carry coal to the Argentine as cheaply and certainly more profitably than an American vessel can carry it from Norfolk. The British vessel brings back a load of wheat, which pays part of the expense; the American ship generally comes back empty. Nature and the trend of economic development have given the United Kingdom a fairly well-balanced trade as the result of its coal deposits. From the shipping standpoint the United States labors under the handicap of abundant natural resources, however paradoxical this may seem.

The disparity between outbound and inbound traffic is not so great in the case of San Francisco. Exports in 1921 totaled 1,291,505 tons, against imports of 882,826 tons. Steel, oil, grain, and lumber go out, while jute, coconut meat and copra, nitrate of soda, rice, and vegetable oils—all fairly heavy—come in. The trade of San Francisco with Australia and New Zealand almost balanced, imports into San Francisco amounting to 82,149 tons and exports amounting to 80,788 tons; likewise its trade with India almost balanced—45,328 tons inbound, 42,974 outbound. On the other hand, 100,022 tons were brought in from the east coast of Mexico, to which nothing was sent; while imports from the west coast of Mexico totaled 6,463 tons as against exports to that section of 19,879 tons.

The outbound trade of New York amounted to 11,341,351 tons, as compared with 9,205,809 tons inbound. Imports from Mexico were 3,525,374 tons, or over one-third of the total; and most of this trade consisted of crude oil carried in specialized vessels. This means that general cargo vessels carrying freight from New York found, on an average, scarcely more than half a shipload of cargo for the return voyage. A detailed discussion of the trade of New York would serve to show the extent of this disparity on the various routes; but such an analysis will not be attempted here. Data on this point will subsequently be published.

The Kind of Shipping We Need

In considering the steamship services necessary for our trade, it is of primary importance to recognize that the imports of oil and the exports of bulky raw materials must be considered separately. As already pointed out, crude oil moves in specialized vessels which are an integral part of a very profitable business. The exports of heavy raw materials go largely in tramp ships, a type of service this country can not logically be expected to develop. These raw materials normally move to the seaboard before being sold ultimately, so that it is difficult for the seller to divert his shipment to an American vessel. In other words, our real problem is that of determining and establishing liner services to carry a reasonable share of our trade in manufactured and semi-manufactured goods with enough heavy raw materials to make each cargo stow to advantage.

If crude oil is excluded from imports, and coal, bulk oil, grain, cotton, and lumber from exports, the result is an inward and outward volume of cargo fairly well balanced. In the year ended June 30, 1921, out of a total exportation of 58 million tons, exports of coal, bulk oil, grain, cotton, and lumber accounted for approximately 35 million tons,[2] leaving about 23 million tons of miscellaneous commodities; as against imports, exclusive of oil, of about 18 million tons.

The uncritical statement is made that the United States needs a merchant marine of 10 million gross tons to carry 50 per cent of its products. I suspect that a careful analysis would lead to the conclusion that all the cargo and passenger shipping we can support from the profits of operation plus any subsidies which are likely to be granted, is the quantity of tonnage necessary to transport 50 per cent of our imports, excluding oil, and 50 per cent of our exports, excluding coal, grain, cotton, and the like. One hesitates to make this statement because it is preliminary in character and because it is likely to be misunderstood by partisans of certain grandiose schemes. But the discussion must be brought down from the air and grounded in the facts of the case. It is hoped that shortly a defensible estimate of the quantity and character of tonnage necessary to move 50 per cent of our manufactured and semi-manufactured goods can be put forward for critical analysis and revision.

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[2] *Monthly Summary of Foreign Commerce of the United States*, June, 1921, Part I.

DISADVANTAGE OF A COUNTRY RICH IN NATURAL RESOURCES

On the basis of what has been outlined it may be said that a country which has been endowed liberally by nature with raw materials necessary to an advanced industrial development cannot maintain, except at an unusual expense, a merchant marine large enough to carry 50 per cent of its total trade. The exploitation of its natural resources is more profitable than shipping ventures. It loses interest in its materials as soon as they are sold and rarely cares in what vessels they are shipped. The exportation of primary commodities will unbalance its trade, and the profitableness of trafficking in these articles, so eagerly sought after by other less fortunate countries, makes unnecessary, and therefore unlikely, the development of that peculiar genius of management and economy needful for the successful operation of ships on multilateral voyages. In other words, there is not sufficient economic pressure to produce tramp ship operators, and tramps are the type of ships needed for bulky materials. The United States is a case in point, though other raw-material countries illustrate the point equally well. Spain's imports in 1920 were 3.7 million tons, as compared with exports of 8.7 million.[3] A large part of the outward movement was ore, and Spain can be considered as a raw-material country with an insignificant merchant marine in proportion to its trade.

Countries poor in natural resources, but with large and vigorous populations, are forced into lines of activity which do not pay so well perhaps as exploiting the gifts of nature. These alternative activities are usually international trade and services, and of these the shipping industry is inevitably one of the most important. Looked at in perspective, international trade has been the exploitation of the raw materials of countries with little industrial development by those countries which have progressed further along that line. On the other hand, the tendency now seems to be for each of the countries more backward industrially to force, by protection or other means, the growth of manufactures. One refrains from trying to conceive what will happen when all countries are developed to the *n*th degree industrially, or to calculate where and what the profit in trade will be.

OCEAN-TRADE ADVANTAGE OF THE UNITED KINGDOM

It is necessary for countries poor in natural resources to bring in bulky raw materials. These pay something toward the expenses of a ship's operation and consequently enable lower outward rates to be made on finished products. The United Kingdom, quite apart from its geographic location, is an example. The large outward movement of coal makes it possible for British ships to bring in the essential foodstuffs and raw materials cheaply, and the importation of large quantities of bulky products enables favorable rates to be made on the export of British manufactured goods. Exports from the United Kingdom in 1913 amounted to 106.4 million tons, of which 73 million tons were coal. Imports totaled 55.4 million tons. If the continental coal trade is excluded, and it should be because it is little more than a coastwise business, the oversea movement was 57.3 million tons outward and 55.4 million inward.[4]

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[3] *Commerce Repts.*, Dec. 5, 1921, p. 849.

The British Board of Trade, in its report "Shipping and Shipbuilding Industries After the War," stated that:

> A considerable part of the earnings of the steamship lines was derived from . . . inward freights . . . and British manufactures were, therefore, carried abroad at rates which could not have been accorded but for the existence of highly organised services with a considerable volume of trade in other directions. . . . "The principal freight being earned homewards enabled the lines to fix favourable rates of freight on British exports; and shippers not only had the benefit of fast modern tonnage and could rely on definite sailings at not only frequent but regular intervals, but contracts at low rates were given to associated British trade to enable it to secure foreign orders." The practice of according specially low rates of freight to British exports was, however, the exception rather than the rule in the Central American and West Indian trades where inward cargoes were less abundant.[5]

THE CASES OF GERMANY AND JAPAN

Germany is another case in point. Before the war heavy exports of coke helped to give full cargoes for ships clearing for foreign ports, and the importation of bulky raw materials helped to defray the cost of maintaining ships, enabling them to carry out German finished products at favorable rates.

While the rapid growth of the Japanese merchant marine has been due to many factors, one of which was heavy subsidies, geographic and economic conditions favor an expansion of Japanese shipping. The volume of Japanese imports in 1913 almost balanced with the volume of exports—5.3 million tons of imports as compared with 4.6 millions tons of exports, on the basis of the more important items. The trade is perhaps nearer balanced than these figures indicate, since the import figure includes 89 per cent of the total value of imports while the export figure includes only 63 per cent of the total value of exports. It seems necessary for a country which must depend upon the importation of essential commodities to maintain a large merchant fleet. But a country which possesses abundant natural resources has not the same need; other countries will come to its doors.

It is clearly recognized that the character of the trade of a country, while a neglected factor, is not the only one. With economic and political considerations bulking large, it is not necessarily the determining factor with reference to the maintenance of a great merchant fleet. If this aspect of the problem has been overemphasized here, it is probable, to quote the words which Malthus uses with reference to his theory of population, "that having found the bow bent too much one way I was induced to bend it too much the other in order to make it straight."

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[4] *Supreme Econ. Council Monthly Bull. of Statistics*, Vol. 2, 1920–21, No. 3, p. 29; and *Annual Statement of the Trade of the United Kingdom with Foreign Countries and British Possessions*, Cd. 7968, Vol. 1, 1914, p. 319.

[5] Reports of the Departmental Committee Appointed by the Board of Trade to Consider the Position of the Shipping and Shipbuilding Industries After the War, H. M. Stationery Office, London, 1918, pp. 149–150.

Additional facts are needed, and the machinery is being set up to get them. It is only fair also to admit that some terms susceptible of several interpretations have been used and that critical consideration is needed to clarify and establish their usage. When more complete data are obtainable and analyzed, a better formulation of a theory of the influence of geographic factors on the national maintenance of a merchant fleet can be made, and considerable light will be thrown on the shipping problem now before this country.